REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have cancelled original claims 1-8 without prejudice or disclaimer, and have added new claims 9-22 to the application. Of these newly added claims, claims 9-20 are directed to a process for producing an oxygen-absorbing package, with claim 9 being the sole independent claim; and claims 21 and 22 respectively is directed to a strip of a series of oxygen-absorbing packages produced by the process of claim 9, and is directed to an oxygen-absorbing package produced by the process according to claim 9.

Of the process claims, claim 9 recites a process including producing an oxygen-absorbing composition comprising a granular iron powder which contains fine iron powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less, with this production including removing fine iron powder; and packaging the oxygen-absorbing composition in an air-permeable packaging material using an automatic filling-packaging machine. Note, for example, the paragraph bridging pages 3 and 4 of Applicants' Specification. Claims 10 and 11, each dependent on claim 9, respectively recites that the iron powder is a sponge iron power; and recites that the granular iron powder is a coated iron powder prepared by coating an iron powder with an electrolyte in a specified amount. Claims 12 and 13, each dependent on claim 11, respectively recites that the coated iron powder is produced by first coating iron powder and then removing the fine iron powder; and recites that the coated iron powder is produced by first removing fine iron powder and then coating the remaining iron powder. Claim 14, dependent on

claim 13, recites that the coated iron powder is produced by further removing fine iron powder again, after the coating. Claims 15 and 16, each dependent on claim 9, respectively further defines the automatic filling-packaging machine, and further defines the removal of the fine powder; and claim 17, also dependent on claim 9, defines amount of iron powder attached to an outer surface of the oxygen-absorbing package, relative to the surface area of the oxygen-absorbing package. Claims 18-20, each dependent on claim 9, respectively recites that the granular iron powder contains fine iron powder passing through 200-mesh standard sieve in an amount of 3% by weight or less, recites an average particle size of the granular iron powder; and recites a maximum amount of coarse iron powder having a specified diameter, in the granular iron powder.

In connection with the newly added dependent claims, note, for example, pages 5, 6 and 8-10, of Applicants' Specification.

Applicants respectfully submit that all of the claims now presented for consideration by the Examiner patentably distinguish over the teachings of the references applied by the Examiner in rejecting claims in the Office Action mailed July 18, 2002, that is, the teachings of U.S. Patent No. 4,579,223 to Otsuka, et al., and International (PCT) Application No. WO 95/13135 (McKedy), under the provisions of 35 USC 102 and 35 USC 103.

Initially, it is respectfully submitted that these references as applied by the Examiner would have neither disclosed nor would have suggested such process for producing an oxygen-absorbing package as in the present claims, or a strip of a series of oxygen-absorbing packages or an oxygen-absorbing package produced thereby, with the process including removing fine iron powder such that an oxygen-absorbing composition including a granular iron powder which contains fine iron

powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less is produced, with this oxygen-absorbing composition being packaged using an automatic filling-packaging machine. See claim 9. Note also claims 21 and 22.

In addition, it is respectfully submitted that these references would have neither taught nor would have suggested such process as in the present claims, including the more specific definition of the granular iron powder as in various of the dependent claims, including (but not limited to) wherein the fine iron powder passing through a 200-mesh standard sieve is contained in the granular iron powder in an amount of 3% by weight or less (see claim 18); and/or wherein the average particle size of the granular iron powder is 100-250 μm (see claim 19); and/or wherein the granular iron powder includes at most 3% by weight coarse iron powder having a diameter larger than 500 μm (see claim 20).

Furthermore, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested the other aspects of the presently claimed process as in the remaining, dependent claims, including (but not limited to) wherein the iron powder is a sponge iron powder (see claim 10); and/or the iron powder is a coated iron powder prepared by coating an iron powder with an electrolyte in a specific amount (see claim 11); and/or wherein the coating to form the coated iron powder, and removing of fine iron powder to provide the amount of fine iron powder as in the present claims, are performed in sequences as in claims 12-14; and/or wherein the automatic filling-packaging machine is a 3-sided automatic filling-packaging machine of rotary filling type (see claim 15); and/or wherein the removal of the fine iron powder is conducted by screening or separation method using gravity or centrifugal force (see claim 16);

and/or maximum amount of the iron powder attached to an outer surface of the package, as in claim 17.

The present invention is directed to a method of forming an oxygen-absorbing package, particularly appropriate for industrial production of the package and especially useful for forming such package, of an iron powder-based oxygen-absorbing composition within an air-permeable packaging material, using an automatic filling-packaging machine. The oxygen-absorbing package can be used in various preservation techniques, for example, for preserving foodstuffs, beverages, cosmetics, pharmaceutical products, etc.

Oxygen-absorbing compositions containing an iron powder have been extensively used to remove oxygen in preserving various oxygen-sensitive products. However, in industrial processes of packaging such oxygen-absorbing composition, using an automatic filling-packaging machine of high productivity, the oxygen-absorbing composition is likely to attach to the outer surface of the packages, causing deterioration in package appearance and posing safety and hygiene problems. Moreover, the oxygen-absorbing composition, after filling, may be sandwiched at a location of a sealing portion of the bag opening, thereby causing deterioration in both appearance and sealing strength. Such misplaced oxygen-absorbing composition occurs when, for example, upon filling the package, the composition bounces back (*e.g.* scatters) up toward the opening of the bag.

While it has been proposed to carefully control operating conditions of the automatic filling-packaging machine and/or to clean the outer surface of each package with a brush or cloth, to avoid undesirable positioning of the oxygen-absorbing composition, these methods are laborious and costly, and, moreover, fail to produce satisfactory results.

Against this background, the present inventors have made extensive researches on the relationship between the scattered amount and particle size of the iron powder, and in view thereof, provide the present invention which avoids problems of scattering of the oxygen-absorbing composition to undesired locations on the packaging material. Applicants have found that by utilizing an oxygen-absorbing composition including a granular iron powder which contains fine iron powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less by removing the fine iron powder, with packaging using an automatic filling-packaging machine, problems as discussed in the foregoing arising in connection with prior art techniques can be avoided. That is, by removing the fine iron powder such that the granular iron powder contains fine iron powder passing through a 200-mesh standard sieve in a maximum amount of 5% by weight, scattered iron powder, for example, on the outer surface of the package, can be reduced, for example, to an amount of 0.5 mg/m^2 or less with respect to the surface area of the oxygen-absorbing package.

Thus, as described in the paragraph bridging pages 12 and 13 of Applicants' Specification, through application of the present process, including in particular the specified removing of fine iron powder, the iron powder can be prevented from bouncing up in the form of dust and attaching to the outer surface of the package, at the time of the filling operation (using an automatic filling-packaging machine) of the oxygen-absorbing composition. Using the oxygen-absorbing package formed by the present process, products can be preserved for long periods of time without contamination and color change; and, in particular, the oxygen-absorbing package formed according to the presently claimed process can suitably be used for

preserving products, such as foodstuffs, beverages, cosmetics, etc., containing substances which form adducts with iron.

McKedy discloses an oxygen absorber for absorbing oxygen primarily in ambient temperature dry environments. The composition includes in relatively sufficient proportions particulate annealed electrolytically reduced iron, salt for combining with water to produce an electrolyte which combines with the iron to cause it to absorb oxygen, and a water-supplying component comprising activated carbon with liquid water therein for supplying the water to the salt to produce the electrolyte. See the paragraph bridging pages 2 and 3 of McKedy. This patent document further discloses that the particulate annealed electrolytically reduced iron which is used in the composition can be of a size of between about 50-mesh and 325-mesh, and more preferably between about 100-mesh and 325-mesh and most preferably about 200-mesh. See page 5, lines 15-19. Note also, page 5, lines 28-32. This patent document further discloses that, generally, the finer the particulate iron which is used, the speedier will be the oxygen-absorption. Thus, 325-mesh iron and above is preferred from a theoretical standpoint. However, the fineness may be limited by the use of the machinery which is utilized to fabricate, inter alia, the packets. See page 25, lines 18-23.

It is respectfully submitted that McKedy is primarily directed to the oxygen-absorbing composition per se, disclosing desirability of using relatively fine particulate iron. It is respectfully submitted that McKedy would have neither disclosed nor would have suggested, and in fact would have taught away from, producing the iron-absorbing composition comprising a granular iron powder which contains fine iron powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less.

In addition, there is respectfully submitted that McKedy is silent with respect to removing the fine iron powder passing through a 200-mesh standard sieve. Particularly in view of the disclosure of use of iron to about 325-mesh, it is respectfully submitted that McKedy would have neither taught nor would have suggested the removal of the fine iron powder according to the present invention.

Furthermore, it is emphasized that problems solved by the present invention arise particularly in connection with use of automatic filling-packaging machines. It is respectfully submitted that McKedy does not disclose, nor would have suggested, use of such automatic filling-packaging machine. It is respectfully submitted that McKedy does not disclose, nor would have suggested, problems addressed by the present invention, or solution of such problems including the removal of fine iron powder, achieving advantages as described in Applicants' original disclosure.

In addition, it is respectfully submitted that McKedy would have neither taught nor would have suggested the other aspects of the present invention as discussed in the foregoing.

It is respectfully submitted that the addition teachings of Otsuka, et al. would not have rectified the deficiencies of McKedy, such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art. Otsuka, et al. discloses an oxygen absorbent packet employing a double packaging material, the packet including oxygen absorbent packaged and sealed in a double packaging material comprising a gas-permeable outer material layer comprised of a plastic film or transparent paper, a gas-permeable sealing layer, a gas-permeable inner material layer comprised of paper or non-woven fabric, a gas-permeable sealing layer, and an air layer between various of the layers. See column 2, lines 44-52. Note also column 4, lines 34-36. This patent further discloses that the

oxygen absorbent package is generally produced by means of a three-side sealing method or a four-side sealing method, and describes that a three-side sealing automatic filling and packaging machine or other means, or a four-side sealing automatic filling and packaging machine, can be used. See column 6, line 62 to column 7, line 17.

It is noted that Otsuka, et al. does not describe the problem addressed by the present invention, or solution to the problem as provided by the present invention.

Even assuming, arguendo, that the teachings of McKedy and Otsuka, et al. were properly combinable, such combined teachings would have neither disclosed nor would have suggested the presently claimed subject matter, including wherein the oxygen-absorbing composition is produced by a technique including removing fine iron powder such that the granular iron powder contains the fine iron powder passing through a 200-mesh standard sieve in an amount of 5% by weight or less; or, in combination therewith, the other aspects of the present invention as discussed in the foregoing.

The contention by the Examiner that it would have been obvious to use a three-side sealing automatic filling and packing machine because Otsuka, et al. teaches that "doing so" increases the water resistance of the packet and reduces the tendency of the inner and outer material layers to peel or separate, is noted. The Examiner is respectfully requested to point out the specific portion of Otsuka, et al. that teaches that use of the automatic filling and packaging machine "increases the water resistance of the packet and reduces the tendency of the inner and outer material layers to peel or separate". It is respectfully submitted that the motivation set forth by the Examiner for combining the teachings of the references does not come from a proper interpretation of the teachings of Otsuka, et al.

In any event, it is emphasized that the combined teachings of McKedy and of Otsuka, et al. would have neither taught nor would have suggested the problems addressed by Applicants, and solution thereto. Especially in light of the problems addressed by the present invention, and solution thereto, it is respectfully submitted that Applicants have established patentability of the presently claimed subject matter.

In any event, even combining the teachings of McKedy and Otsuka, et al., as applied by the Examiner, it is respectfully submitted that the combined teachings of these references do not disclose, nor would have suggested, the presently claimed process or product formed, including the production of the oxygen-absorbing composition as in claim 9, which includes removing the fine iron powder.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims remaining in the application are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR § 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 396.39350X00), and please credit any excess fees to such Deposit Account.

Respectfully submitted,
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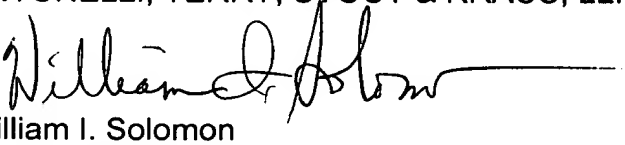

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